The correct answer for each question is indicated by a ✓.

1 CORRECT	A repeater is a connecting device that operates in the _____ layer of the Internet model.
	✓ ⦿ **A)** physical
	○ **B)** data link
	○ **C)** network
	○ **D)** all of the above

2 CORRECT	A _____ regenerates a signal, connects segments of a LAN, and has no filtering capability.
	✓ ⦿ **A)** repeater
	○ **B)** bridge
	○ **C)** router
	○ **D)** none of the above

3 CORRECT	A _____ is a connecting device that operates in the physical and data link layers of the Internet model.
	○ **A)** repeater
	✓ ⦿ **B)** bridge
	○ **C)** router
	○ **D)** none of the above

4 CORRECT	A _____ bridge can forward and filter frames and automatically build its forwarding table.
	○ **A)** simple
	○ **B)** dual
	✓ ⦿ **C)** transparent
	○ **D)** none of the above

5 CORRECT	A bridge can use the _____ algorithm to create a loopless topology.
	○ **A)** binary tree
	✓ ⦿ **B)** spanning tree
	○ **C)** multiway tree
	○ **D)** none of the above

6 CORRECT	A _____ LAN allows several LANs to be connected.
	✓ ⦿ **A)** backbone
	○ **B)** wireless
	○ **C)** wired
	○ **D)** none of the above

7 CORRECT	A backbone is usually a _____.
	○ **A)** bus
	○ **B)** star
	✓ ⦿ **C)** either (a) or (b)
	○ **D)** neither (a) nor (b)

8 CORRECT	A virtual local area network (VLAN) is configured by _____.

✓ ◉ **A)** software

○ **B)** physical wiring

○ **C)** hardware

○ **D)** none of the above

9 CORRECT	Membership in a VLAN can be based on _____.

○ **A)** port numbers

○ **B)** MAC addresses

○ **C)** IP addresses

✓ ◉ **D)** all of the above

10 CORRECT	VLANs can_____.

○ **A)** reduce network traffic

○ **B)** provide an extra measure of security

○ **C)** either (a) or (b)

✓ ◉ **D)** both (a) and (b)

11 CORRECT	_____ is just a connector.

○ **A)** An active hub

✓ ◉ **B)** A passive hub

○ **C)** either (a) or (b)

○ **D)** neither (a) nor (b)

12 CORRECT	In a star-topology Ethernet LAN, _____ is just a point where the signals coming from different stations collide; it is the collision point.

○ **A)** An active hub

✓ ◉ **B)** A passive hub

○ **C)** either (a) or (b)

○ **D)** neither (a) nor (b)

13 INCORRECT	_____ is part of the media; its location in the Internet model is below the physical layer.

○ **A)** An active hub

✓ ○ **B)** A passive hub

◉ **C)** either (a) or (b)

○ **D)** neither (a) nor (b)

14 CORRECT	A _____ is a device that operates only in the physical layer.

○ **A)** passive hub

✓ ◉ **B)** repeater

○ **C)** bridge

○ **D)** router

15 CORRECT	A _____ receives a signal and, before it becomes too weak or corrupted, regenerates the original bit pattern. It then sends the refreshed signal.

    ○ **A)**passive hub

✓ ◉ **B)**repeater

    ○ **C)**bridge

    ○ **D)**router

---

16 INCORRECT   A _____ forwards every frame; it has no filtering capability.

    ◉ **A)**passive hub

✓ ○ **B)**repeater

    ○ **C)**bridge

    ○ **D)**router

---

17 CORRECT   _____ is actually a multiport repeater. It is normally used to create connections between stations in a physical star topology.

✓ ◉ **A)**An active hub

    ○ **B)**A passive hub

    ○ **C)**either (a) or (b)

    ○ **D)**neither (a) nor (b)

---

18 CORRECT   A _____ operates in both the physical and the data link layer.

    ○ **A)**passive hub

    ○ **B)**repeater

✓ ◉ **C)**bridge

    ○ **D)**router

---

19 CORRECT   A _____ can check the MAC addresses contained in the frame.

    ○ **A)**passive hub

    ○ **B)**repeater

✓ ◉ **C)**bridge

    ○ **D)**router

---

20 CORRECT   A _____ has a table used in filtering decisions.

    ○ **A)**passive hub

    ○ **B)**repeater

✓ ◉ **C)**bridge

    ○ **D)**none of the above

---

21 CORRECT   A _____ is a device in which the stations are completely unaware of its existence.

    ○ **A)**passive hub

    ○ **B)**repeater

    ○ **C)**simple bridge

✓ ◉ **D)**transparent bridge

---

22 INCORRECT   IEEE 802.1d specification, defines _____ criteria for a transparent bridges.

    ◉ **A)**two

✓ ○ **B)**three

○ **C)** four

○ **D)** none of the above

---

23   **CORRECT**

A spanning tree is a graph in which there is no _____.

  ○ **A)** node

  ○ **B)** branch

✓ ◉ **C)** loop

  ○ **D)** arc

---

24   **INCORRECT**

In a bridged LAN, the _____ algorithm creates a topology in which each LAN can be reached from any other LAN through one path only.

✓ ○ **A)** spanning tree

  ○ **B)** binary tree

◉ **C)** unary tree

  ○ **D)** none of the above

---

25   **CORRECT**

A three-layer switch is a kind of _____.

  ○ **A)** repeater

  ○ **B)** bridge

✓ ◉ **C)** router

  ○ **D)** none of the above

---

26   **CORRECT**

A two-layer switch is a _____.

  ○ **A)** repeater

✓ ◉ **B)** bridge

  ○ **C)** router

  ○ **D)** none of the above

---

27   **CORRECT**

Some new two-layer switches, called _____ switches, have been designed to forward the frame as soon as they check the MAC addresses in the header of the frame.

✓ ◉ **A)** cut-through

  ○ **B)** go-through

  ○ **C)** come-through

  ○ **D)** none of the above

---

28   **CORRECT**

A _____ is a three-layer device that handles packets based on their logical addresses.

  ○ **A)** repeater

  ○ **B)** bridge

✓ ◉ **C)** router

  ○ **D)** none of the above

---

29   **CORRECT**

A _____ normally connects LANs and WANs in the Internet and has a table that is used for making decisions about the route.

  ○ **A)** repeater

  ○ **B)** bridge

✓ ◉ **C)** router

D) none of the above

---

30   CORRECT   A _____ switch is a faster and more sophisticated router.

- **A)** two-layer
- ✓ ● **B)** three-layer
- **C)** four-layer
- **D)** none of the above

---

31   CORRECT   A _____ is normally a computer that operates in all five layers of the Internet model or seven layers of OSI model.

- **A)** repeater
- **B)** bridge
- **C)** router
- ✓ ● **D)** gateway

---

32   CORRECT   A _____ can be used as a connecting device between two internetworks that use different models.

- **A)** repeater
- **B)** bridge
- **C)** router
- ✓ ● **D)** gateway

---

33   CORRECT   In a _____ backbone, the backbone is just one switch.

- **A)** bus
- **B)** ring
- ✓ ● **C)** star
- **D)** none of the above

---

34   CORRECT   A _____ link acts as a LAN in a remote backbone connected by remote bridges.

- ✓ ● **A)** point-to-point
- **B)** multipoint
- **C)** multidrop
- **D)** none of the above

---

35   INCORRECT   VLANs create _____ domains.

- **A)** unicast
- ● **B)** multicast
- ✓ ○ **C)** broadcast
- **D)** none of the above

---

36   CORRECT   In a(n) _____ configuration, the administrator types the port numbers, the IP addresses, or other characteristics, using the VLAN software.

- ✓ ● **A)** manual
- **B)** automatic
- **C)** semiautomatic
- **D)** none of the above

37 CORRECT	In a(n) _____ configuration, the stations are automatically connected or disconnected from a VLAN using criteria defined by the administrator.

    ○ **A)** manual

✓ ◉ **B)** automatic

    ○ **C)** semiautomatic

    ○ **D)** none of the above

38 CORRECT	In a(n) _____ configuration, the initializing is done manually, with migrations done automatically.

    ○ **A)** manual

    ○ **B)** automatic

✓ ◉ **C)** semiautomatic

    ○ **D)** none of the above

Chapter 17

1 CORRECT	_____ is a standard developed by ANSI for fiber-optic networks.

✓ ◉ **A)** SONET

    ○ **B)** SDH

    ○ **C)** either (a) or (b)

    ○ **D)** neither (a) nor (b)

2 CORRECT	_____ is a standard developed by ITU-T.

    ○ **A)** SONET

✓ ◉ **B)** SDH

    ○ **C)** either (a) or (b)

    ○ **D)** neither (a) nor (b)

3 CORRECT	SONET has defined a hierarchy of signals called _____.

✓ ◉ **A)** STSs

    ○ **B)** STMs

    ○ **C)** either (a) or (b)

    ○ **D)** neither (a) nor (b)

4 CORRECT	SDH has defined a hierarchy of signals called _____.

    ○ **A)** STSs

✓ ◉ **B)** STMs

    ○ **C)** either (a) or (b)

    ○ **D)** neither (a) nor (b)

5 CORRECT	An _____ signal is the optical modulation of an STS-n (or STM-n) signal.

✓ ◉ **A)** OC-n

    ○ **B)** TDM-n

    ○ **C)** FDM-n

D) none of the above

---

6 INCORRECT

.SONET defines _____ layers.

- **A)** two
- **B)** three
- ✓ **C)** four
- **D)** five

---

7 CORRECT

SONET is a _____ TDM system.

- **A)** asynchronous
- ✓ **B)** synchronous
- **C)** statistical
- **D)** none of the above

---

8 CORRECT

A SONET system can use _____.

- **A)** STS multiplexers
- **B)** regenerators
- **C)** add/drop multiplexers
- ✓ **D)** all of the above

---

9 CORRECT

SONET sends _____ frames per second

- **A)** 1000
- **B)** 2000
- **C)** 4000
- ✓ **D)** 8000

---

10 CORRECT

In SONET each frame lasts _____ microseconds.

- **A)** 20
- **B)** 64
- **C)** 128
- ✓ **D)** none of the above

---

11 CORRECT

An STS-1 frame is made of _____ rows

- **A)** 1
- ✓ **B)** 9
- **C)** 90
- **D)** none of the above

---

12 CORRECT

An STS-1 frame is made _____ columns

- **A)** 1
- **B)** 9
- ✓ **C)** 90
- **D)** none of the above

13 CORRECT

An STS-3 frame is made of _____ rows.

- ○ **A)** 1
- ✓ ◉ **B)** 9
- ○ **C)** 27
- ○ **D)** none of the above

14 CORRECT

An STS-3 frame is made of _____ columns.

- ○ **A)** 9
- ○ **B)** 90
- ✓ ◉ **C)** 270
- ○ **D)** none of the above

15 CORRECT

SONET network topologies can be _____.

- ○ **A)** linear
- ○ **B)** ring
- ○ **C)** mesh
- ✓ ◉ **D)** all of the above

16 CORRECT

A linear SONET network can be _____.

- ○ **A)** point-to-point
- ○ **B)** multipoint
- ✓ ◉ **C)** either (a) or (b)
- ○ **D)** neither (a) nor (b)

17 CORRECT

A ring SONET network can be _____.

- ○ **A)** unidirectional
- ○ **B)** bidirectional.
- ✓ ◉ **C)** either (a) or (b)
- ○ **D)** neither (a) nor (b)

18 CORRECT

To make SONET backward-compatible with the current hierarchy, its frame design includes a system of.

- ○ **A)** OCs
- ○ **B)** STMs
- ○ **C)** STSs
- ✓ ◉ **D)** VTs

19 CORRECT

A _____ is a repeater.

- ✓ ◉ **A)** regenerator
- ○ **B)** ADM
- ○ **C)** STS multiplexer/demultiplexer
- ○ **D)** none of the above

20 CORRECT

_____ allow insertion and extraction of

signals.

   ○ **A)** regenerators

✓ ◉ **B)** ADMs

   ○ **C)** STS multiplexer/demultiplexers

   ○ **D)** none of the above

21	CORRECT

A _____ is the optical link connecting two neighbor devices.

✓ ◉ **A)** section

   ○ **B)** line

   ○ **C)** path

   ○ **D)** none of the above

22	CORRECT

A _____ is the portion of the network between two multiplexers.

   ○ **A)** section

✓ ◉ **B)** line

   ○ **C)** path

   ○ **D)** none of the above

23	CORRECT

A _____ is the end-to-end portion of the network between two STS multiplexers.

   ○ **A)** section

   ○ **B)** line

✓ ◉ **C)** path

   ○ **D)** none of the above

24	CORRECT

The _____ layer is responsible for the movement of a signal from its optical source to its optical destination.

   ○ **A)** section

   ○ **B)** line

✓ ◉ **C)** path

   ○ **D)** photonic

25	CORRECT

The _____ layer is responsible for the movement of a signal across a physical line.

   ○ **A)** section

✓ ◉ **B)** line

   ○ **C)** path

   ○ **D)** photonic

26	CORRECT

The _____ layer is responsible for the movement of a signal across a physical section.

✓ ◉ **A)** section

   ○ **B)** line

   ○ **C)** path

   ○ **D)** photonic

27 CORRECT

The _____ layer corresponds to the physical layer of the OSI model.

- ○ **A)** section
- ○ **B)** line
- ○ **C)** path
- ✓ ◉ **D)** photonic

28 CORRECT

An STS multiplexer is a _____ device.

- ○ **A)** one-layer
- ○ **B)** two-layer
- ○ **C)** three-layer
- ✓ ◉ **D)** four-layer

29 CORRECT

An add/drop multiplexer is a _____ device.

- ○ **A)** one-layer
- ○ **B)** two-layer
- ✓ ◉ **C)** three-layer
- ○ **D)** four-layer

30 CORRECT

A regenerator is a _____ device.

- ○ **A)** one-layer
- ✓ ◉ **B)** two-layer
- ○ **C)** three-layer
- ○ **D)** four-layer

31 CORRECT

In SONET, for each frame, the bytes are transmitted _____.

- ✓ ◉ **A)** from left to the right, top to bottom
- ○ **B)** from right to the left, bottom to top
- ○ **C)** from left to the right, bottom to top
- ○ **D)** from right to the left, top to bottom

32 INCORRECT

In SONET, for each byte, the bits are transmitted _____.

- ◉ **A)** from least significant to the most significant
- ✓ ○ **B)** from most significant to the least significant
- ○ **C)** two at a time
- ○ **D)** three at a time

33 CORRECT

Each _____ in a SONET frame can carry a digitized voice channel.

- ○ **A)** bit
- ✓ ◉ **B)** byte

○**C)**frame

○**D)**none of the above

34 CORRECT	The section overhead consists of _____octets.

  ○**A)**1

  ○**B)**6

✓ ◉**C)**9

  ○**D)**18

35 CORRECT	Line overhead consists of _____ bytes.

  ○**A)**1

  ○**B)**6

  ○**C)**9

✓ ◉**D)**18

36 CORRECT	The path overhead consists of _____ bytes.

  ○**A)**1

  ○**B)**6

✓ ◉**C)**9

  ○**D)**18

37 CORRECT	In _____ APS, there are normally two lines: one working line and one protection line. Both lines are active all the time.

✓ ◉**A)**one-plus-one

  ○**B)**one-to-one

  ○**C)**one-to-many

  ○**D)**none of the above

38 CORRECT	In _____ APS, there is one working line and one protection line. The data are normally sent on the working line until it fails.

  ○**A)**one-plus-one

✓ ◉**B)**one-to-one

  ○**C)**one-to-many

  ○**D)**none of the above

39 CORRECT	In _____APS, there is only one protection line for many working lines. When a failure occurs in one of the working lines, the protection line takes control until the failed line is repaired.

  ○**A)**one-plus-one

  ○**B)**one-to-one

✓ ◉**C)**one-to-many

  ○**D)**none of the above

Chapter 18

CORRECT	_____ is a virtual-circuit wide-area network that was designed in response to demands for a new type of WAN in the late 1980s and early 1990s.

- ○ **A)** X.25
- ✓ ◉ **B)** Frame Relay
- ○ **C)** ATM
- ○ **D)** none of the above

2 CORRECT	Frame Relay provides _____.

- ○ **A)** PVCs
- ○ **B)** SVCs
- ✓ ◉ **C)** either (a) or (b)
- ○ **D)** neither (a) nor (b)

3 CORRECT	VCIs in Frame Relay are called _____.

- ○ **A)** PVC
- ○ **B)** SVC
- ✓ ◉ **C)** DLCIs
- ○ **D)** none of the above

4 CORRECT	In Frame Relay, when a _____ is selected, the corresponding table entry is recorded for all switches by the administrator

- ✓ ◉ **A)** PVC
- ○ **B)** SVC
- ○ **C)** either (a) or (b)
- ○ **D)** neither (a) nor (b)

5 CORRECT	In Frame Relay, when. _____ is selected, it requires establishing and terminating phases

- ○ **A)** a PVC
- ✓ ◉ **B)** an SVC
- ○ **C)** either (a) or (b)
- ○ **D)** neither (a) nor (b)

6 CORRECT	Frame Relay has _____.

- ○ **A)** only the physical layer
- ○ **B)** only the data link
- ✓ ◉ **C)** the physical and data link layers
- ○ **D)** the physical, data link, and network layers

7 CORRECT	At the data link layer, Frame Relay uses a protocol that supports _____control.

- ○ **A)** flow
- ○ **B)** error
- ○ **C)** either (a) or (b)
- ✓ ◉ **D)** neither (a) nor (b)

8 **CORRECT**

In Frame Relay, an address can be _____ bytes.

- ○ **A)** only 2
- ○ **B)** 2 to 3
- ✓ ◉ **C)** 2 to 4
- ○ **D)** none of the above

9 **CORRECT**

In Frame Relay, the EA field defines the number of bytes; it is _____ in the last byte of the address.

- ○ **A)** 0
- ✓ ◉ **B)** 1
- ○ **C)** 2
- ○ **D)** 3

10 **CORRECT**

To handle frames arriving from other protocols, Frame Relay uses a device called a _____.

- ○ **A)** VOFR
- ✓ ◉ **B)** FRAD
- ○ **C)** MUX
- ○ **D)** none of the above

11 **CORRECT**

Frame Relay networks offer an option called _____ that sends voice through the network.

- ✓ ◉ **A)** VOFR
- ○ **B)** FRAD
- ○ **C)** MUX
- ○ **D)** none of the above

12 **CORRECT**

_____ is the cell relay protocol designed by the corresponding Forum and adopted by the ITU-T.

- ○ **A)** X.25
- ○ **B)** Frame Relay
- ✓ ◉ **C)** ATM
- ○ **D)** none of the above

13 **CORRECT**

A _____ is defined as a small, fixed-size block of information.

- ○ **A)** frame
- ○ **B)** packet
- ✓ ◉ **C)** cell
- ○ **D)** none of the above

14 **CORRECT**

In ATM, a virtual connection is defined by _____.

- ○ **A)** VPI
- ○ **B)** VCI
- ○ **C)** DLCI
- ✓ ◉ **D)** a combination of (a) and (b)

15 **CORRECT**

The ATM standard defines _____ layers.

○ **A)** two

✓ ◉ **B)** three

○ **C)** four

○ **D)** five

| 16 | INCORRECT | The VPI of a UNI is _____ bits in length. |

✓ ○ **A)** 8

○ **B)** 12

◉ **C)** 16

○ **D)** 24

| 17 | INCORRECT | The VPI of an NNI is _____ bits in length. |

○ **A)** 8

✓ ○ **B)** 12

◉ **C)** 16

○ **D)** 24

| 18 | CORRECT | The ATM data packet is a cell composed of _____ bytes. |

○ **A)** 40

○ **B)** 50

○ **C)** 52

✓ ◉ **D)** 53

| 19 | CORRECT | _____ eliminates the varying delay times associated with different-size packets. |

○ **A)** X.25

○ **B)** Frame Relay

✓ ◉ **C)** ATM

○ **D)** all of the above

| 20 | CORRECT | A(n) _____ is the interface between a user and an ATM switch. |

✓ ◉ **A)** UNI

○ **B)** NNI

○ **C)** NNN

○ **D)** None of the above

| 21 | CORRECT | _____ is the interface between two ATM switches. |

○ **A)** UNI

✓ ◉ **B)** NNI

○ **C)** NNN

○ **D)** none of the above

| 22 | CORRECT | In ATM, connection between two endpoints is accomplished through _____. |

○ **A)** TPs

○ **B)** VPs

○**C)**VCs

✓ ◉**D)**all of the above

---

23 INCORRECT

In ATM, the _____ layer accepts transmissions from upper-layer services and maps them into ATM cells.

○**A)**physical

◉**B)**ATM

✓ ○**C)**AAL

○**D)**none of the above

---

24 CORRECT

In ATM, the _____ layer provides routing, traffic management, switching, and multiplexing services.

○**A)**physical

✓ ◉**B)**ATM

○**C)**AAL

○**D)**none of the above

---

25 CORRECT

In ATM, the _____ layer defines the transmission medium, bit transmission, encoding, and electrical-to-optical transformation.

✓ ◉**A)**physical

○**B)**ATM layer

○**C)**AAL

○**D)**none of the above

---

26 CORRECT

The AAL is divided into _____ sublayers.

✓ ◉**A)**two

○**B)**three

○**C)**four

○**D)**none of the above

---

27 CORRECT

In ATM, _____ is for constant-bit-rate data.

✓ ◉**A)**AAL1

○**B)**AAL2

○**C)**AAL3/4

○**D)**AAL5

---

28 CORRECT

In ATM, _____is for short packets.

○**A)**AAL1

✓ ◉**B)**AAL2

○**C)**AAL3/4

○**D)**AAL5

---

29 CORRECT

In ATM, _____ is for conventional packet switching (virtual-circuit approach or datagram approach).

○**A)**AAL1

○**B)**AAL2

✓ ◉**C)**AAL3/4

○**D)**AAL5

30 CORRECT	In ATM, _____ is for packets requiring no sequencing and no error control mechanism.

- ○ **A)**AAL1
- ○ **B)**AAL2
- ○ **C)**AAL3/4
- ✓ ◉ **D)**AAL5

31 CORRECT	_____ technology can be adapted for use in a LAN (ATM LAN).

- ○ **A)**X.25
- ○ **B)**Frame Relay
- ✓ ◉ **C)**ATM
- ○ **D)**none of the above

32 CORRECT	In a _____ ATM LAN, an ATM switch connects stations.

- ✓ ◉ **A)**pure
- ○ **B)**legacy
- ○ **C)**mixed architecture
- ○ **D)**none of the above

33 CORRECT	In a _____ ATM LAN, the backbone that connects traditional LANs uses ATM technology.

- ○ **A)**pure
- ✓ ◉ **B)**legacy
- ○ **C)**mixed architecture
- ○ **D)**none of the above

34 CORRECT	A _____ ATM LAN combines features of a pure ATM LAN and a legacy ATM LAN.

- ○ **A)**pure
- ○ **B)**legacy
- ✓ ◉ **C)**mixed architecture
- ○ **D)**none of the above

Chapter 14

CORRECT	IEEE has defined the specifications for a wireless LAN, called _____, which covers the physical and data link layers.

- ○ **A)**IEEE 802.3
- ○ **B)**IEEE 802.5
- ✓ ◉ **C)**IEEE 802.11
- ○ **D)**IEEE 802.2

2 CORRECT	In IEEE 802.11, a ____ is made of stationary or mobile wireless stations and an optional central base station, known as the access point (AP).

- ○ **A)**ESS
- ✓ ◉ **B)**BSS

---

3 CORRECT

In IEEE 802.11, a BSS without an AP is called an _____.

✓ **A)** an ad hoc architecture

B) an infrastructure network

C) either (a) or (b)

D) neither (a) nor (b)

---

4 CORRECT

In IEEE 802.11, a BSS with an AP is sometimes referred to as _____.

A) an ad hoc architecture

✓ **B)** an infrastructure network

C) either (a) or (b)

D) neither (a) nor (b)

---

5 CORRECT

In IEEE 802.11, communication between two stations in two different BSSs usually occurs via two _____.

A) BSSs

B) ESSs

✓ **C)** APs

D) none of the above

---

6 CORRECT

In IEEE 802.11, a station with _____ mobility is either stationary (not moving) or moving only inside a BSS.

✓ **A)** no-transition

B) BSS-transition

C) ESS-transition

D) none of the above

---

7 CORRECT

In IEEE 802.11, a station with _____mobility can move from one BSS to another, but the movement is confined inside one ESS.

A) no-transition

✓ **B)** BSS-transition

C) ESS-

transition

D) none of the
above

---

8 CORRECT

In IEEE 802.11, a station with _____ mobility can move
from one ESS to another.

        A) no-transition

        B) BSS-
transition

✓ ⦿ **C)** ESS-
transition

        D) none of the
above

---

9 CORRECT

In IEEE 802.11, _____ is an optional access method that can
be implemented in an infrastructure network (not in an ad hoc
network).

        A) DCF

✓ ⦿ **B)** PCF

        C) either (a) or
(b)

        D) neither (a)
nor (b)

---

10 INCORRECT

In IEEE 802.11, when a frame is going from one station in a BSS
to another without passing through the distribution system, the
address flag is _____

✓   **A)** 00

        B) 01

        C) 10

⦿ **D)** 11

---

11 CORRECT

In IEEE 802.11, when a frame is coming from an AP and going
to a station, the address flag is _____.

        A) 00

✓ ⦿ **B)** 01

        C) 10

        D) 11

---

12 CORRECT

In IEEE 802.11, when a frame is going from a station to an AP,
the address flag is _____.

        A) 00

        B) 01

✓ ⦿ **C)** 10

        D) 11

---

13 INCORRECT

In IEEE 802.11, when a frame is going from one AP to another
AP in a wireless distribution system, the address flag is _____

⦿ **A)** 00

        B) 01

        C) 10

✓ ◯ **D)** 11

---

14 CORRECT

The IEEE 802.11 standard for wireless LANs defines two services: _____ and _____.

◯ **A)** BSS; ASS

◯ **B)** ESS; SSS

✓ ◉ **C)** BSS; ESS

◯ **D)** BSS; DCF

---

15 CORRECT

In IEEE 802.11, the access method used in the DCF sublayer is _____.

◯ **A)** ALOHA

✓ ◉ **B)** CSMA/CA

◯ **C)** CSMA/CD

◯ **D)** none of the above

---

16 CORRECT

In IEEE 802.11, the access method used in the PCF sublayer is _____.

◯ **A)** contention

◯ **B)** controlled

✓ ◉ **C)** polling

◯ **D)** none of the above

---

17 CORRECT

In IEEE 802.11, the _____ is a timer used for collision avoidance.

✓ ◉ **A)** NAV

◯ **B)** BSS

◯ **C)** ESS

◯ **D)** none of the above

---

18 INCORRECT

In IEEE 802.11, the MAC layer frame has _____ fields.

◉ **A)** four

◯ **B)** five

◯ **C)** six

✓ ◯ **D)** none of the above

---

19 CORRECT

In IEEE 802.11, the addressing mechanism can include up to _____ addresses.

✓ ◉ **A)** four

◯ **B)** five

◯ **C)** six

◯ **D)** none of the above

---

20 INCORRECT

The original IEEE 802.11, uses _____.

◉ **A)** FHSS

○ **B)** DSSS

○ **C)** OFDM

✓ ○ **D)** either (a) or (b)

21 INCORRECT	The IEEE 802.11a, uses _____.

◉ **A)** FHSS

○ **B)** DSSS

✓ ○ **C)** OFDM

○ **D)** either (a) or (b)

22 INCORRECT	The IEEE 802.11b, uses _____.

◉ **A)** FHSS

✓ ○ **B)** DSSS

○ **C)** OFDM

○ **D)** either (a) or (b)

23 INCORRECT	The IEEE 802.11g, uses _____.

◉ **A)** FHSS

○ **B)** DSSS

✓ ○ **C)** OFDM

○ **D)** either (a) or (b)

24 CORRECT	The original IEEE 802.11, has a data rate of _____Mbps.

✓ ◉ **A)** 1

○ **B)** 6

○ **C)** 11

○ **D)** 22

25 INCORRECT	IEEE 802.11a, has a data rate of _____Mbps.

◉ **A)** 1

○ **B)** 2

✓ ○ **C)** 6

○ **D)** none of the above

26 INCORRECT	IEEE 802.11b, has a data rate of _____Mbps.

◉ **A)** 1

○ **B)** 2

✓ ○ **C)** 5.5

○ **D)** none of the above

27 INCORRECT

IEEE 802.11g, has a data rate of _____Mbps.

    ◉**A)**1
    ○**B)**2
    ○**C)**11
 ✓○**D)**22

---

28 INCORRECT

The IEEE 802.11 wireless LANs use _____ types of frames.

    ◉**A)**four
    ○**B)**five
    ○**C)**six
 ✓○**D)**none of the above

---

29 CORRECT

Bluetooth is a _____ technology that connects devices (called gadgets) in a small area.

    ○**A)**wired LAN
 ✓◉**B)**wireless LAN
    ○**C)**VLAN
    ○**D)**none of the above

---

30 CORRECT

A Bluetooth network is called a _____.

 ✓◉**A)**piconet
    ○**B)**scatternet
    ○**C)**bluenet
    ○**D)**none of the above

---

31 CORRECT

In Bluetooth, multiple _____ form a network called a _____.

    ○**A)**scatternet; piconets
 ✓◉**B)**piconets: scatternet
    ○**C)**piconets: bluenet
    ○**D)**bluenet; scatternet

---

32 CORRECT

A Bluetooth network consists of _____ primary device(s) and up to _____ secondary devices.

    ○**A)**one; five
    ○**B)**five; three
    ○**C)**two; six
 ✓◉**D)**one; seven

---

33 CORRECT

The RTS and CTS frames in CSMA/CA _____ solve the hidden station problem. The RTS and CTS frames in CSMA/CA _____ solve the exposed station problem.

✓ ◉**A)**can; cannot
  ◯**B)**cannot; can
  ◯**C)**can; can
  ◯**D)**cannot; cannot

---

34 **INCORRECT**   In Bluetooth, the current data rate is _____Mbps

◉**A)**2
◯**B)**5
◯**C)**11
✓ ◯**D)**none of the above

---

35 **CORRECT**   In Bluetooth, the _____ layer is roughly equivalent to the physical layer of the Internet model.

✓ ◉**A)**radio
  ◯**B)**baseband
  ◯**C)**L2CAP
  ◯**D)**none of the above

---

36 **CORRECT**   In Bluetooth, the _____layer is roughly equivalent to the MAC sublayer in LANs.

◯**A)**radio
✓ ◉**B)**baseband
  ◯**C)**L2CAP
  ◯**D)**none of the above

---

37 **CORRECT**   In Bluetooth, the L2CAP sublayer, is roughly equivalent to the LLC sublayer in LANs.

◯**A)**radio
◯**B)**baseband
✓ ◉**C)**L2CAP
  ◯**D)**none of the above

---

38 **CORRECT**   The access method in Bluetooth is _____.

◯**A)**FDMA
✓ ◉**B)**TDD-TDMA
  ◯**C)**CDMA
  ◯**D)**none of the above

---

39 **INCORRECT**   In Bluetooth, the _____ link is used when avoiding latency (delay in data delivery) is more important than integrity (error-free delivery).

✓ ◯**A)**SCO
  ◯**B)**ACL

○ **C)**ACO

◉ **D)**SCL

---

40 CORRECT

In Bluetooth, the _____ link is used when data integrity is more important than avoiding latency.

○ **A)**SCO

✓◉ **B)**ACL

○ **C)**ACO

○ **D)**SCL

---

41 CORRECT

Bluetooth uses _____method in the physical layer to avoid interference from other devices or other networks.

○ **A)**DSSS

✓◉ **B)**FHSS

○ **C)**FDMA

○ **D)**none of the above